

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A device for the determination of the a position of an instrument in a vascular system, comprising:

first and second localizers fitted to the instrument each indicating a plurality of spatial positions, orientation of the instrument, and/or a shape of an instrument section;

a memory ~~for storing~~ to store a vascular map; and

a ~~data processing unit for correcting~~ processor configured to

optimize a quality dimension including weighted components for measuring a deviation of the plurality of spatial positions, orientation of the instrument, and/or the shape of the instrument section, and

correct the plurality of spatial positions of the first and second localizers, taking into account a distance of the plurality of spatial positions from a vascular layout represented by the vascular map, a distance between the first and second localizers, the orientation of the first and second localizers, and a ~~the~~ quality dimension-including weighted components for measuring the deviation of the plurality of spatial positions, orientation of the instrument, and/or the shape of the instrument section from a layout represented by the vascular map.

2. (Previously presented) The device as claimed in claim 1, wherein at least one of the first

and second localizers incorporates a magnetic field sensor of an electromagnetic localizing device.

3. (Currently amended) The device as claimed in claim 1, wherein the ~~data processing unit~~processor is further configured to calculate a locally continuous transformation from respective corrections of the plurality of spatial positions.

4. (Previously presented) The device as claimed in claim 1, wherein the first and second localizers are attached to the instrument in a known relative position used for correcting the plurality of spatial positions.

5. (Currently amended) The device as claimed in claim 4, wherein a first spatial position of the plurality of spatial positions indicated by the second localizer is corrected using the quality dimension in accordance with the layout of the vascular map, so that a first spatial position ~~of~~ indicated by the first localizer and a second spatial position indicated by ~~of~~ the second localizer adopt the known relative position.

6. (Currently amended) The device as claimed in claim 1, wherein the ~~data processing unit~~processor is further configured to output a warning if one of the ~~an~~ orientation $\{r_2''-r_4'\}$ of the instrument at a first spatial position of the plurality of spatial positions indicated by ~~of~~ the first localizer and a second spatial position of the plurality of spatial positions indicated by ~~of~~ the second localizer and/or a ~~the~~ shape of the instrument section ~~deviating~~ deviate by more

than a preset limit value from the measured orientation and/or shape.

7. (Previously presented) The device as claimed in claim 1, wherein the plurality of spatial positions relative to the vascular map is verified.

8. (Currently amended) The device according to claim 1, further comprising an imaging device ~~for generating~~ configured to generate the vascular map.

9. (Currently amended) A method for determining a position of an instrument in a vascular system using first and second localizers attached to the instrument and ~~of a~~ vascular map, the method comprising acts of:

the first and second localizers indicating ~~measuring~~ a plurality of spatial positions, ~~of the first and second localizers and on an~~ orientation of the instrument and/or shape of the ~~an~~ instrument section;

optimizing a quality dimension including weighted components for measuring a deviation of the plurality of spatial positions, orientation of the instrument, and/or the shape of the instrument section, and

correcting the measured plurality of spatial positions position with reference to a of the first and second localizers, taking into account a distance of the plurality of spatial positions from a vascular layout represented by the vascular map, a distance between the first and second localizers, the orientation of the first and second localizers, and a the quality dimension including weighted components measuring on the one hand the deviation

~~of the measured plurality of spatial positions of the first and second localizers and the deviation of the orientation measured and/or shape of the instrument section from a layout according to the vascular map.~~

10. (Previously presented) The method as claimed in claim 9, wherein a spatially continuous transformation is calculated on the basis of a plurality of corrections.